MARINE REVIEW.

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Deep Water and Big Ships—Lake Freights.

An increased export demand, causing an active movement of grain to the seaboard during the fall months, is now the only hope of lake vessel owners. The freight situation has grown worse from day to day, until it is absolutely impossible for vessels of less than 2,000 tons capacity to clear expenses. Eighty per cent. or more of the ore business of a big season has been cared for in four months. Deep water and big new ships have done it. The political disturbance and the fear of free silver entertained by investors and business men generally has brought on general demoralization. But few vessel owners have stopped to consider the practical side of present conditions in the lake trade, or to take a view of another season when there will be 18 or 19 feet, at least, of water in all parts of the rivers from Lake Erie to Lake Superior. Vessels drawing 17 feet of water and cargoes aggregating 5,500 net tons are now realities in the lake business. This new order of things, which will double itself in extent next season, is not wholesome to contemplate, but it must not be lost sight of as a factor in the present low range of lake freights. More ore by about 750,000 tons was moved up to Aug. 15 of this year than had been shipped at a corresponding period a year ago, and the grain movement out of Chicago, even to this writing, has been heavier than it ever was in a previous season. The same holds true of soft coal shipments up to the first of August. These statements should be convincing as to the effect of deep water and new tonnage on lake freights.

Of all the big ore mines in the Lake Superior region, the record of the Oliver, on the Mesabi range, will stand out this year as most remarkable. This is a Carnegie property, and its heavy product has been used to a certain extent by the Carnegie company to oppose the ore pool. The Oliver has already produced 600,000 tons of ore, and will very probably quit shipping about Oct. 1 with a record of 800,000 tons. It is understood that this mine's allotment in the Bessemer pool was 500,000 tons, so that the balance of 300,000 tons is non-Bessemer. Of the total of 800,000 tons, the Carnegie company will take about 600,000 tons. This big block of Mesabi ore taken in connection with the Carnegie purchases of high-grade Bessemer ores from the Minnesota and other companies last spring, is referred to as an explanation of conditions that have permitted the Carnegie company to remain out of the ore market. It is said that the big Pittsburg interest secured nearly enough of the high-grade low phosphorus ores, added to what they had on hand, to "sweeten" Oliver to an amount that would closely approximate their requirements for the year. During July the Oliver mined and shipped 180,000 tons. In one day recently two large steam shovels at this property mined 10,750 tons.

Efforts of the Lake Carriers' Association to secure gas buoys for numerous shoals on the lakes are gradually meeting with success. New buoys of the Pintsch type, recently provided by the United States light-house board, have replaced spar buoys at the following points on the St. Lawrence river, and will be of special advantage to vessels in the Ogdensburg trade: Bay State shoal buoy No. 5 at S. W. end of a small 5-foot shoal, 1½ miles below Cross-Over island, E. side of the channel; Empire shoal buoy No. 6, marking outer edge and upper end of an 8-foot shoal, N. side of channel, just below Sister island light-house; Chapman shoal buoy No. 14, marking S. E. point of a shoal 1,370 feet W. S. W. ½ W., from the W. end of North Colborne island.

Notwithstanding numerous reports of the sale of the fast river steamer Unique to representatives of the Cuban insurgents, the Review received a telegram, Wednesday, from C. McElroy of St. Clair, Mich., owner of the steamer, saying: "The sale is not closed; time allowance has not expired." Negotiations for the sale of the vessel are pending, but it would seem that the purchasers, whoever they may be, are slow in coming to conclusions.

Toronto and return—Low rates via the Nickel Plate road routed through Buffalo and Niagara Falls. Tickets sold Aug. 31 and Sept. 1 to 11, returning until Sept. 14. Canada's great fair. 288 Sep 10

Lake Superior Iron Co.

Treasurer W. D. Rees of the Lake Superior Iron Co., Cleveland, issued recently a report to the stockholders dealing with affairs of the company during the year ending April 30, 1896. The company paid dividends to the amount of $3 per share during the year. Its gross receipts, excluding sales of real estate, for the year were $973,655.03, and expenditures $969,036.56, leaving net profits for the year after crediting depreciation account with $30,000 to offset reduction in valuation of vessels, of $203,975.22 The company's six steel steamers are now valued on its books at only $665,000. There was in stock at the company's mines on April 30, 1895, 287,409 gross tons of ore of all kinds; mined during the year ending April 30, 1896, 390,964 tons; shipped from mines, 354,789 tons; delivered to customers, 363,007 tons; in stock at mines April 30, 1896, 323,584 tons. A balance sheet, date of April 30, 1896, shows the following items: Real estate and mining property, $1,264,722.06; steamships (six) $665,000; iron ore, $857,772.99; agent's inventory, etc., $64,732.94; bills receivable, $56,333.53; accounts receivable, $55,065.82; cash, $240,778.06; cash, Boston office, $662.96; Atlantic Iron Co.'s stock, $25; Brown-Bonnell Iron Co.'s stock, $3,950; office furniture, $200; Excelsior furnace, $96,342.39; treasury stock, $400,000; steamship operating account, 1896, $25,828.18; total, $3,731,413.93. Against the foregoing items are the following: Accounts payable at mine, $104,623.88; advance payments on ore undelivered, $416,275.33; capital stock, $2,500,000; guaranty, $258,754.16; depreciation, $417,098.33; profit and loss, $34,662.23; total, $3,731,413.93.

Vessel owners on the lakes are probably not all aware of the fact that the newspaper reports of vessel movements, accidents, etc. have for some time past been furnished through one central office in Chicago, and by an association known as the Lake Marine News Association, of which Homer J. Carr, Western Union building, Chicago, is the manager. This association has systematized marine reports for newspapers, and has no competitor in the work. At the Sault, Mackinaw and Detour the association has its own stations and reporters, but reports from Port Huron are furnished by Lynn and from Detroit by Westcott. Cleveland vessel owners and shippers know of the value of this association through the bulletins furnished several times each day by the Marine Review. They probably do not know, however, that the stations of this association at Mackinaw City, Sault Ste. Marie and Detour are open to commercial business. Any vessel owner wishing to communicate in any way with a ship passing at these points can do so by simply addressing the Lake Marine News Association at Detour, Mackinaw City or the Sault as the case may be. The Review recommends the use of this service, at the points referred to, for the reason that enterprise in establishing these stations, and in consolidating the work of vessel reporting as a whole, has brought system into the business and has reduced, very largely, the charges to vessels from this source. The Lake Marine News Association is a substantial corporation that has been dealing with the newspapers of lake cities for some five or six years and its management is of a responsible and reliable kind.

On Aug. 6 the Review published a long list of steamers fined by Capt. Davis of the revenue cutter service for violation of rules governing the navigation of St. Mary's river. Since that date more fines, aggregating $2,600, have been imposed as follows: City of Grand Rapids, violation of rules 1 and 2, $400; Centurion, rules 1 and 6, $400; Osceola, rule 1, $200; Thomas Maytham, rules 1 and 8, $400; Arabia, rule 1, $200; Kearsarge, rule 3, $200; Ira H. Owen, rule 1, $200; Manitoba (Br.), rule 3, $200; Sunbeam, rule 2, $200; Ossifrage, rule 3, $200.

It is quite generally agreed among vessel men who have a knowledge of wrecking business that Capt. James Reid will be about as far from raising the Cayuga when the present season is at an end as he was when it opened.

Canada's Premier Discusses Canal Matters.

It would seem from recent newspaper interviews with Canada's new premier, the Hon. Mr. Laurier, that the Liberal government, which has just taken office, desires and intends to signalize its administration by a renewal of close neighborly relations with the United States. In one of these interviews Mr. Laurier is thus quoted on the canal question:

"The American fleet on the lakes now numbers many large steamers. There are many vessels of 4,000 tons, and I hear that your ship yards are turning out vessels of even 6,000 tons. The day of small steamers like that of the wooden sailing ship has passed. Between Buffalo and Duluth there is a channel now practically completed, that is deep enough to accommodate vessels of 20 feet draft. We in Canada are aiming to make a channel of the same depth from Lake Erie through the Welland canal, and the canals below Kingston to Montreal, but the task is a formidable one, owing to the immense expense involved. Up to date we have spent about $60,000,000 on our canals, the major portion on the Welland and St. Lawrence canals, which is a large sum for 5,000,000 of people, especially when it is considered that we have also contributed very liberally for railroads. It goes without saying that many great benefits would be conferred upon the farmers of the western and northwestern states, no less, of course, than upon the farmers of the Canadian northwest, if these great steamers could load at Port Arthur and Duluth and carry produce without breaking bulk, as they have to do now at the Welland and again at Prescott, right through to Ogdensburg, Kingston, Oswego, Montreal or Quebec, and carry back merchandise and manufactures for the western settlers at cheap rates. Farm produce is low the world over, owing to the immense production which modern science —the self-binder, the railroad and the compound marine engine—has rendered possible, and, so far as I can see, it is not likely to reach its former price for some time, if ever.

"You can not, if I may be allowed to say, help the farmer on this continent by any quack device. You can do it only by cheapening the cost of producing the stuff and by reducing the expense of getting it to European markets. A 21-foot channel from Lake Superior and Lake Michigan to the Atlantic ocean would reduce the cost of what the farmer has to buy from the eastern states and give him lower transportation rates for what he has to sell. I suppose, too, that a reduced rate on the lakes and on the St. Lawrence water route would oblige the railroads north, that is in Canada, and south, that is in the United States, to meet it with equally low rates to and from the seaboard during the season of navigation, so that the farmer far inland from the route would experience equally the good effects. Commissioners have been appointed by the governments of the two countries to consider the question of a deep waterway system, and I am in hopes that a perfectly feasible scheme will shortly be reported—a scheme that will enable the United States to participate in the work and exercise a joint control without in any way compromising the sovereignty of Canada over its own territory. It should be a purely business arrangement with nothing political about it."

The Fire Hold as a Factor in High Speed.

In all late reports from England, engineers who have had to do with the development of high speed in fast war vessels, as well as big passenger ships, and especially those using water tube boilers, have laid great stress on advantages that have been gained through engineers giving far more attention than they have in the past to affairs of the fire hold. It would seem that the same policy is being followed by officers of the American Line steamers St. Louis and St. Paul and that the recent record breaking performances of these steamers is attributed mainly to close attention to firing. The New York Tribune of recent date has the following article on the subject:

"There has been an epidemic of new record-making among the transatlantic steamships this month. Old and new boats have been distancing all their old performances. On her last trip the American liner St. Paul came shooting over the bar nearly two hours ahead of the schedule established by her sister ship, the St. Louis, the week before. The performance of the St. Louis in its turn had been a substantial reduction on the previous record of the St. Paul. In the same eventful week the Hamburg-American boat, the Furst Bismarck, cut forty-nine minutes from her previous best time on the eastbound trip. Envious rivals point out the fact that the route of the Furst Bismarck was by way of Cherbourg, instead of direct from Southampton, which was the case when her former record was established, and they say that the Hamburg boat made better time simply because her new route was shorter, but the general opinion seems to be that the distance is about the same either way. The honors have not been confined to the younger pack of ocean greyhounds, either. The old-time steamer Britannic of the White Star Line renewed her youth and outdid her ancient record of fifteen years ago by slipping across from Daunt's Rock to Sandy Hook in three hours and twenty-three minutes less time than she ever did before.

"In view of this fast steaming, the natural question arises, 'What is the cause? Why is it that old and new vessels are outdoing their past performances?' The general consensus of opinion seems to be that it has been due to two causes, engine room and fire room, and favorable weather. In the case of the St. Paul's voyage both of these conditions seem to have been present in a high degree. James Carnegie, the chief engineer of that record-breaker, has the faculty of getting the utmost possible out of the small army of engineers, firemen, coal passers and trimmers under his command. 'The matter of firing,' said an experienced engineer, 'has become a science. It absorbs the time and attention of the engineer more than the running of the engine. I came over on the St. Louis on her last trip, and Chief Engineer Walls was never seen on deck or in the cabin. He was below attending to business strictly.'

"As to the St. Paul's performance, Mr. Carnegie said: 'Our success is due, first, to the management of our magnificent ship; but after that in large part to the support I have received from every member of the engineering staff. They all worked with a will, and in perfect harmony. My senior first assistant stayed up all night before she came off the dry dock to be sure that the propeller wheels were set exactly right. This is typical of the work done by all throughout the voyage. We didn't have a single fireman laid off, and the average temperature of the fire-room was only 95 degrees. This was due to the fine system of ventilation and the fact that the air in the fire room is being continually changed by the suction of the battery of fans which supply the Howden draft. Of course, men can do their best work in pure air of that temperature. We have three shifts of engineers and firemen, each of which has four hours on and eight hours off. There are six engineers and twenty-two firemen in each shift. I have arranged with the management for a system of bonuses for firemen and oilers so that they may feel an interest in the work as well as the officers.'"

The American consul at Copenhagen reports to the state department that a young boatswain in the Danish navy has invented a telegraphic apparatus for communication with a ship at a certain anchorage without the use of a direct line. An electric battery with one pole in contact with the earth and a telegraphic key and interrupter at the other, constitutes the Bland apparatus, from which a cable is laid to and around the anchorage in a coil from 1,000 to 1,200 feet in diameter. A selenoid connected telephone aboard the ship completes the apparatus. The plan has worked successfully, and the young inventor is now at work to get rid of the telegraph key and make the communication wholly telephonic. Among the advantages of the new method is that signals in this manner will not, as in case of flags, be visible to an enemy, and that ships moving near the shore can communicate with various stations while passing over the apparatus arranged for the purpose.

It is encouraging to note, as an indication of ship building progress in the country, that eastern ship builders have of late been getting an occasional order from foreign countries. Lewis Nixon of the Crescent Ship Yard, Elizabethport, N. J., made a contract a few days ago with the Mexican Imrovement Co. of Tobasco, Mexico, for a small stern wheel passenger and freight steamer. If the Cramps and the Union Iron Works can land the contracts on which they are still figuring with the Japanese government, it is quite probable that some important orders for merchant ships will follow.

In a large number of cases the Blue Book of American Shipping has been sent on approval to ship owners, ship builders, marine engineers and others interested in shipping. In every case the price of the book, which is $5.00, has been remitted immediately.

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Centurion's Fast Time.—Cargo Records.

Some time ago the freight steamer Centurion, owned by the Hopkins Steamship Co. of St. Clair, Mich., and built by F. W. Wheeler & Co. of West Bay City, made the run from Buffalo to Duluth, 997 miles, in 67 hours and 50 minutes, or at an average speed for the full distance, making no deductions for checking down or other delays in the rivers, of 14.7 miles an hour. Aside from the Union liners Owego and Chemung, the Centurion has been looked upon as the fastest freight steamer on the lakes, and now that she has made another fast run between Buffalo and Duluth, beating her own reocrd, her owners have additional cause to lay claim to this prestige. On her last trip up, running light, she left Buffalo on Aug. 12 at 8:15 p. m. and arrived in Duluth Aug. 15 at 1:25 p. m., making the run in 65 hours and 10 minutes, or at an average speed for the whole distance of 15.3 miles an hour. In this calculation no allowance is made for reduced speed in the rivers (only seven miles an hour in a part of the Sault river), nor for a stop of forty-five minutes at St. Clair. Two of the owners of the Centurion were aboard and she was hurried, but it is claimed that she did not reach her maximum speed, as the engines, which are capable of withstanding more than 100 turns, were not turned faster than ninety-seven or ninety-eight turns at an outside. Time reported for the run from Buffalo to the "Dummy" is exactly twelve hours, which would mean a speed of 16½ miles on Lake Erie. From the Sault to Duluth, distance of 395 miles, the time reported is 24 hours and 50 minutes, indicating a speed of a fraction less than 16 miles an hour on the entire Lake Superior run; and from Fort Gratiot to Detour, 221 miles, the time reported is 13 hours and 40 minutes, which would mean 16.2 miles an hour on Lake Huron. Other speed and cargo records, corrected to date , are:

Iron ore—Coralia, Mutual Transportation Co. of Cleveland, 4,813 gross or 5,391 net tons, Escanaba to Ashtabula, draft of 16 feet 1½ inches; S. S. Curry, Hawgood & Avery Transit Co. of Cleveland, 4,569 tons gross or 5,117.net tons, Escanaba to South Chicago, draft of 18 feet. Lake Superior cargoes—Steamer Sir Henry Bessemer, Bessemer Steamship Co. of Cleveland, 4,117 gross or 4,611 net tons, Ashland to Conneaut, draft of 14 feet 6 inches.

Grain—Steamer Queen City, A. B. Wolvin of Duluth, 207,000 bushels of corn, Chicago to Buffalo, 16 feet 8 inches draft; steamer Maricopa, Minnesota Steamship Co., Cleveland, 191,700 bushels of corn, Chicago to Buffalo.

Coal—S. S. Curry, Hawgood & Avery Transit Co. of Cleveland, 4,535 net tons bituminous, Conneaut to Gladstone; Selwyn Eddy, Eddy Bros. of Bay City, Mich., 4,252 net tons anthracite, Buffalo to Milwaukee.

Speed—Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour; Centurion, Hopkins Steamship Co. of St. Clair, Mich., Buffalo to Duluth, 997 miles, 65 hours and 10 minutes, 15.3 miles an hour.

Ship Yard Matters.

Commodore Frank Welcome of the Davidson fleet, who was in Cleveland a few days ago, says that notwithstanding the present condition of business on the lakes, Capt. James Davidson will certainly put down keels shortly for two or three more big wooden freight carriers. "Capt. Davidson has a large amount of timber on hand," Capt. Welcome says, "and a force of men to care for who can not well be allowed to scatter to other places or to other employment. Then, too, material and labor are both probably as cheap now as they will be for some time to come, and Capt. Davidson can afford to build vessels and operate them until such time as he may find purchasers. On the investments which they represent to him they can make money whenever any of the best of the steel ships can be operated. One big steamer now on the stocks at West Bay City is about finished, and the two tugs are also well along, so that I think it is only a matter of a little time when more keels must be laid, in order to keep things going."

F. W. Wheeler & Co. are making fair progress with the four big steel ships which they have under way, notwithstanding the labor difficulties that they have encountered. It has been decided to give the name Pere Marquette to the big car ferry, which is to run between Ludington and Manitowoc, in connection with the Flint and Pere Marquette railway. Of the three Rockefeller ships, the first to be completed will be the schooner James Nasmith, which will be in service in the course of another week or ten days. The second Rockefeller barge, to be named Sir Isaac Lothian Bell, will not be finished until Oct. 1, and the steamer will come out somewhat later. The tonnage of the James Nasmith, custom house measurement, is 3,422.64 gross and 3,162.29 net. Tonnage of the Minnesota Steamship Co.'s steel barge Magna, which has just left the South Chicago ship yard, is 3,259.43 gross and 3,124.70 net.

Another wooden steamer which the Calvin Co. (Canadian) is to build at Garden Island, Ont., will be 200 feet keel, 215 feet on spar deck, 37 feet beam and 15 feet hold. She will have a triple expansion engine, but the size has not been definitely decided upon, though it will be expected to develop about 700 horse power. Steam will be furnished by two Scotch boilers, and the ship will be equipped with steam steering gear, steam windlass, deck winches etc. The new boat will have large ports forward, to facilitate loading and discharging timber.

It can be stated definitely that it is the intention of the shipping department of the Standard Oil Co. to take to the coast this fall the two oil barges now in service on the lakes—Nos. 75 and 76. These barges were built for coast work, and their work on the lakes during this and last season has been only temporary. The larger barge, building at the works of the Union Dry Dock Co., Buffalo, is intended for lake service.

Lights on Middle and Scare Crow Islands.

There is some objection on the part of the light-house board, and probably one of the district officers on the lakes, to recommending lights which the Lake Carriers' Association has asked for on Middle island and Scare Crow island, Lake Huron. On account of this objection, Secretary Keep of Buffalo, and Capt. Geo. P. McKay of Cleveland, are desirous of securing opinions regarding the necessity of these lights from captains of freight and passenger vessels. These opinions will be submitted to the district officers and to the light-house board. Capt. McKay says of these aids to navigation:

"The argument that the district officers of the board have advanced in the past against a light on Middle island is to the effect that it is not needed as a coast light, and that there is a harbor of refuge on Presque Isle. We can not argue the coast light side of the question with them, although we know the light would be valuable even as a coast light. But there should be no difficulty in convincing these officers that Presque Isle as a harbor of refuge, notwithstanding its range lights, etc., is absolutely worthless to vessels of the present day, while a light on Middle island would enable vessels to take advantage by night of the natural harbor of refuge under that island, and would also permit of their using False Presque Isle as another excellent harbor of refuge. The harbor of refuge known as Presque Isle harbor is not now used at all, excepting probably by a few small traders. It is entirely too shallow in all its parts, and even if vessels got into it they would not have room to work around and get to an anchor. The absolute uselessness of Presque Isle as a harbor of refuge for lake vessels of to-day is well understood by all vessel masters. But with a light on Middle island vessels and tows bound down Lake Huron would take shelter in great numbers under the island from heavy easterly and south-easterly winds. On the other hand, vessels bound up and encountering heavy northerly or westerly winds would find this light a sure guide to shelter under false Presque Isle. Unlike Presque Isle harbor, these two natural harbors—False Presque Isle and the lee of Middle island—would be available for all times and for vessels of all kinds.

"Now as to the proposed light on Scare Crow island: The very large shipping interests of Saginaw bay are entitled to this light. It is needed for the protection of traffic to and from Alpena, and also for the traffic northward out of Saginaw bay. The latter would be especially benefited by this light during westerly and northwesterly gales, when vessels are forced to run close to the west shore of Lake Huron and Thunder bay. The steamboat passenger traffic throughout this part of Lake Huron is, as everybody knows, very extensive."

An excursion is to be run via the Nickel Plate road to Toronto, Niagara Falls and Thousand Islands. Two special trains will leave Cleveland Sept. 7, at 5:30 a. m. and 9:30 p. m. Toronto, $4.50; Niagara Falls, $3.50; and Thousand Islands, $9.00. Reserve sleepers early. 306 Sep 6

Toronto Fair, Sept. 1 to 12—The Nickel Plate road will place excursion tickets on sale Aug. 31. 256 Sep 2.

Obstructions in South Passage, Lake Erie.

In the Review of the 6th inst., Wm. T. Blunt, assistant to Col. Jared A. Smith, United States engineer at Cleveland, furnished information regarding the location of a shoal found recently in the south passage, Lake Erie. Mr. Blunt now favors us with a map of the locality, and in a letter accompanying it he says:

"I may add to the map the following notes, as of immediate interest to those using the waters of the south passage: There is considerable uncertainty as to the location of the steamer Oades when she struck, but it seems very reasonable to suppose that she struck the 11-foot boulders about E. S. E. from Starve island reef buoy, and on the sandy bottom. While these are not very dangerous, the point is emphasized that there are undoubtedly many boulders scattered about these waters, sufficiently dangerous to at least cause masters to use great caution. At the time the Oades struck, she was drawing 14 feet; the water was 3 feet below the chart level at which soundings are given, owing to a lively gale from the south-west. The boat was making about twelve miles an hour, which would cause her to squat at least a foot. Add to this the occasional surging due to seas and it is readily seen that she might have struck bottom in a chart depth of 19 feet.

Wm. T. Blunt,
Cleveland, Aug. 22, 1896. U. S. Assistant Engineer.

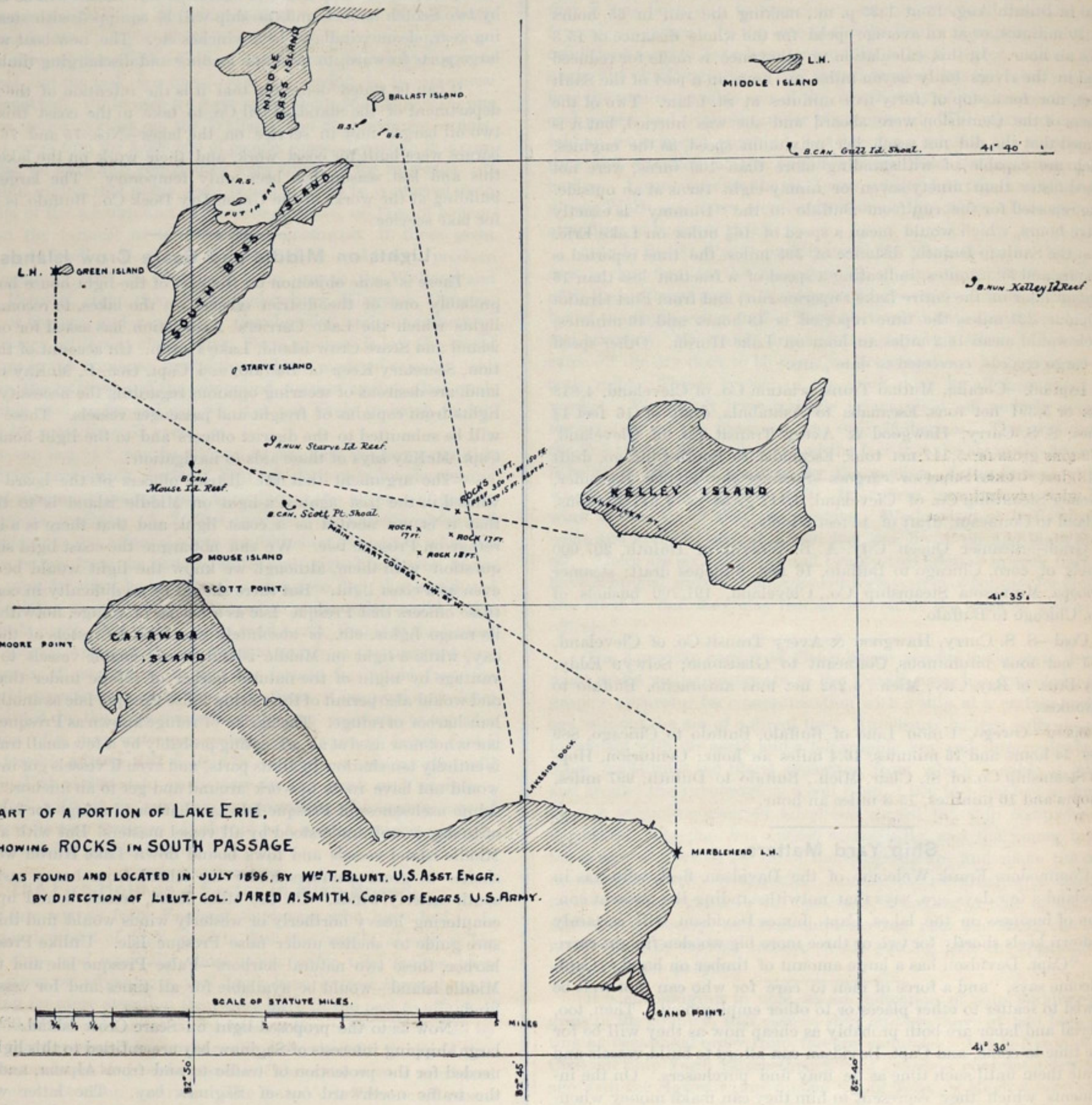

CHART OF A PORTION OF LAKE ERIE,
SHOWING ROCKS IN SOUTH PASSAGE
AS FOUND AND LOCATED IN JULY 1896, BY Wm T. BLUNT, U.S. ASST. ENGR.
BY DIRECTION OF LIEUT.-COL. JARED A. SMITH, CORPS OF ENGRS. U.S. ARMY.

direct course to Kelley island docks, as she was searching for her barge at the time and headed for Kelley island. As Capt. Lemay seemed doubtful of having been so far north and east, the search was continued for some time after the 11-foot reef was found. The locality indicated by Capt. Lemay was carefully swept, over some 5,000,000 square feet area, and many unlocated and drifting sweeps were made at random when weather would not allow for regular work. This area comprises an exceedingly small portion of the waters of the passage, and yet there were found within it three boulders with 17 to 18 feet over them, and located in 20 to 21 feet of water. One of these is but 10 feet square, and the others 20 feet and each isolated in a smooth

In a letter to the Dry Dock Engine Works of Detroit, Walter E. Campbell, president and manager of the Detroit, Belle Isle & Windsor Ferry Co., says: "We ran our steamer Pleasure during 1894 with natural draft and during 1895 with the Howden system of hot draft put in by your firm. The saving of fuel in 1895 was 210 pounds of coal for every running hour throughout the season. We had also a full complement of steam at all times and were enabled to use a cheaper grade of coal than that which we used in 1894."

The Nickel Plate Road sells excursion tickets to the G. A. R. Encampment at St. Paul, Aug. 30, 31, and Sept. 1. 252 Sep 2.

Enquirer–Say When Yacht Race.

Editor Marine Review:—The steam yacht race between the Say When and the Enquirer has proved by no means of local interest only. Neither is the interest confined to the great lakes, but naval architects all over the country have been interested in this encounter, and I think I can truly say that many have been greatly surprised at the result. Speed on paper is one thing, but speed actually attained is another. Speed on a measured mile is one thing, but a sustained speed for a number of hours run is another. Too much stress is laid today on short spurts or measured-mile trials as criterion for speed. In many cases steam is bottled up and the vessel flies over a mile course or so in a very short time, and then we hear of her remarkable speed. On the coast here, tide is often entirely ignored, and when you hear of the remarkable speed of Hudson river and Sound steamboats, etc., you may rest assured that the vessel has attained that speed (unless otherwise specified) with a two or three-knot current in her favor.

There are not 50 per cent. of steam vessels built today with sufficient boiler power for their designed maximum speed, and many so-called 20-mile boats have not sufficient steam-generating power to produce a mean speed of 17 miles for any distance over an hour's run. Such, as Mr. Fred A. Ballin has already stated, is the case of the Say When. I have heard many remarkable accounts of the great speed attained by the Say When, and she is credited on paper with a speed of between 26 and 27 miles per hour. But let us study, for a few moments, her dimensions, viz., of engines, etc., and we shall see how ridiculous these claims are. Assuming the data used by Mr. Ballin to be correct, we have:

	Say When.	Enquirer.
Length over all	138 feet	145 feet
Length L. W L	116 feet	126 feet
Beam L. W. L	13 feet	16½ feet
Mean draft	6 feet	7 feet
Engine, cylinders, inches	14¼, 17½, 23½, 23½, 23½	10¼, 17, 27
Engine, stroke, inches	15½	16
Engine, revolutions	350	325
Boiler, heating surface	1,400	2,200
Boiler, grate surface	48⅓	51
Boiler, working pressure	250	250
Year vessel built	1888	1896
Material	composite	steel

The co-efficient of displacement of the Say When is about .37, and this gives us a displacement of 96 tons. The engine, as Mr. Ballin states, is supposed to be a duplicate of the Cushing's engine. Data in my possession gives the size as 11, 16, 22 and two at 22½ by 15 inches stroke, but assuming the size of the engine to be as stated, it is ridiculous to suppose that with 250 pounds steam pressure and 350 revolutions the I. H. P. is 1,200. The maximum I. H. P. developed by the Cushing was 1,720, and as she is a twin-screw boat, each engine would develop about 860 I. H. P., maximum. I find the engine was designed for 800 H. P., but after making detail calculation of the power capable of being developed at 350 revolutions, I should say 830 I. H. P. is the maximum of the engine as fitted in the Say When. It is certain that she did not develop this power in her race with the Enquirer, as the boiler power is decidedly insufficient to furnish the steam necessary. I have estimated that she developed 440 I. H. P., to give her the speed attained, 17.75 miles, and this gives her a displacement performance constant of about 175. Supposing 830 H. P. was developed—and it certainly was not—the performance constant would be but 92. The Say When is a well-modeled boat, of light composite construction and if she had sufficient boiler power I have estimated that she would attain a speed of 19 knots, or 21.88 miles, with the stated maximum horse power of 830. The fact of her proportion being nine beams to one length does not make her superior as a racer to one of eight beams to one length, and the sooner designers cast aside these old-time theories the better.

I always had the impression that the Union Dry Dock Co. of Buffalo had designed the Enquirer to attain a speed of 20 miles per hour, but I see that I must have had a wrong impression, for she certainly has neither boiler nor engine capable of producing the power necessary to give that result. If the revolutons stated by Mr. Ballin are correct, the engine of the Enqurer ought to develop 640 I. H. P., and this, I guess, is just about what she averaged in her race with the Say When. The co-efficeint of displacement of the Enquirer is probably .39, and this gives a displacement of 162 tons. Assuming that the vessel was to her load line on her recent trial, the performance constant would be about 172, which shows very good efficiency and economical performance for a vessel of her class. If the Enquirer was designed for 20 miles speed, machinery capable of developing 970 I. H. P. should have been placed on board.

The great trouble with the Say When undoubtedly lies in the fact that her boiler power is greatly insufficient. The proportion of heating surface to I. H. P. on the Say When is but 1.68, while on the Enquirer it is 3.43, but if the Enquirer was designed for 20 miles speed, then her engine is much too small and her steam-generating power is also small in the same proportion. Following are approximate figures estimated from data available.

	Say When.	Enquirer.
Mean draft	6 feet	7 feet
Displacement	96 tons	162 tons
Co-efficient of displacement	.37	.39
Maximum I. H. P	830	640
I H. P. developed in race	440	640
Speed, miles	17.75	17.83
Speed, knots	15.41	15.48

As far as the actual power developed in the race goes, I think you will find that both boats show about the same efficiency of performance. The Taylor water tube boiler, from the figures in the Review, shows considerable steam-generating power on very small floor space and light weight, and in this respect it compares favorably with any water tube boiler in the market today.

It is a good thing for naval architects when the real speed of vessels is brought to light, as people today have so many exaggerated ideas regarding speed that it bothers designers considerably. The Mediterranean steam yacht races, in which all classes of European steam yachts compete, are generally won by 15-knot boats, excluding, of course, such a boat as the Giralda, and this is about the same speed as that attained in the Enquirer and Say When race. I am glad that at last steam yachts have been able to race in this country without the machinery breaking down when half over the course, and without boyish fighting as to the result. It is certainly gratifying and proves that the owners are true sportsmen.

If measured-mile trials are to determine the speed of a vessel, the boat should be sent over the course at least four or six times each way and the mean speed taken, and this should be done without giving her time to bottle up steam between each run. A two-hour's run or so over a measured course is, however, generally preferable, if the tide is accurately accounted for. If it is possible for the Review to obtain authentic information as regards the draft on trial, and I. H. P. developed, of these yachts in their recent race, I trust they will do it for the benefit of interested professional men. William A. Fairburn.

Bath, Me., Aug. 24, 1896.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes on Aug. 22, 1896:

	Wheat, bushels.	Corn, bushels.
Chicago	13,156,000	5,812,000
Duluth	5,188,000	6,000
Milwaukee	206,000	1,000
Detroit	325,000	17,000
Toledo	768,000	121,000
Buffalo	1,095,000	635,000
Total	20,738,000	6,592,000

As compared with a week ago, the above figures show at the several points named a decrease of 717,000 bushels of wheat, and 751,000 bushels of corn.

It is said that the new transatlantic steamer Pennsylvania, which the Hamburg-American line is having built at Belfast, Ireland, will have a dead weight carrying capacity of between 13,000 and 14,000 tons. Her displacement will be 20,000 tons. She is 568 feet long, 62 feet beam and 42 feet depth. Engines will be quadruple expansion of 7,000 horse power, and the ship is expected to attain a speed of 14 to 15 knots. She will be launched in October and will ply between New York and Hamburg.

Tickets are on sale Aug. 31 and Sept. 1 to 11 at extremely low rates via the Nickel Plate road to Toronto Canada, account the International Fair, Sept. 1 to 12, and are routed via Buffalo and Niagara Falls.
285 Sep 10

MARINE REVIEW

DEVOTED TO LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 409 Perry-Payne building, Cleveland, Ohio, by John M. Mulrooney and F. M. Barton.

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Entered at Cleveland Post Office as Second class Mail Matter.

The books of the United States treasury department on June 30, 1895, contained the names of the 3,342 vessels, of 1,241,459.14 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1895, was 360 and their aggregate gross tonnage 643,260.40; the number of vessels of this class owned in all other parts of the country on the same date was 309 and their tonnage 652,598,72, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1895, was as follows:

	Number.	Gross Tonnage.
Steam vessels	1,755	857,735.13
Sailing vessels	1,100	300,642.10
Unrigged	487	83,081.91
Total	3,342	1,241,459.14

The gross registered tonnage of the vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30, 1891	204	111,856.45
" " " 1892	169	45,968.98
" " " 1893	175	99,271.24
" " " 1894	106	41,984.61
" " " 1895	93	36,352.70
Total	347	335,433,98

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC. (*From Official Reports of Canal Officers.*)

	St. Mary's Falls Canal.			Suez Canal.		
	1895*	1894	1893	1895	1894	1893
No. vessel passages	17,956	14,491	11,008	3,434	3,352	3,341
Tonnage, net registered	16,806,781	13,110,366	9,849,754	8,448,383	8,039,175	7,659,068
Days of navigation	231	234	219	365	365	365

* 1895 figures include traffic of Canadian canal at Sault Ste. Marie, which was about ¼ per cent. of the whole, but largely in American vessels.

It is probable that there has not been a season on the lakes within the past fifteen years when losses sustained by underwriters up to September have been less than during the present season. There have been no total losses involving big sums and the steel vessels have been remarkably free from strandings. The heaviest loss, thus far sustained, will result from the Chisholm-Oceanica collision, which occurred near Detroit recently, but even in this case there is no grain, flour or other valuable cargo destroyed and the vessels will be in commission again shortly. It is unfortunate for the regular companies doing the business on the lakes, however, that they are "not in it" during this period of good luck. As usual they have less than their share of the business during a season that bids fair to be profitable to underwriters. The "foreigners" have the great bulk of the best risks. When insurance was being placed last spring, the representatives of foreign underwriters gave vessel owners low rates and a policy that covered practically everything in the way of losses. Representatives of the regular companies, on the other hand, increased premiums and limited their policies. Now it is to be hoped that the season will pass with profit in the insurance business, not so much on account of a feeling favorable to foreign competition, which is not altogether of a fair kind, but for the results in cheaper insurance which it will bring next season. Barring great losses on the lakes this fall, the home companies will be forced, in order to get any of the best class of risks next season, to reduce their rates and offer a policy equal to the foreign policy. Vessel owners who have been dealing with the foreign underwriters say there is nothing in the claim that delays and other difficulties attend the settlement of losses, and it would seem that the regular agents, if they are to have even a moderate share of the best business in future, must find a way of adjusting expenses so as to meet this competition on even grounds.

Since the big 400-foot freight steamers have been taking out of South Chicago cargoes of corn aggregating full 200,000 bushels, or more than 5,500 net tons, an organization of business men and railway managers in that place known as the Progressive Association has been distributing circulars among manufacturers in all parts of the country, directing attention to harbor facilities of the port on the Calumet and inviting iron manufacturers especially to examine sites offered for new plants. Cargoes of 6,000 net tons will not be rare next season, when deep channels are fully opened, but the lake cities that do not prepare their harbors for the new condition of things will get none of the business of the big ships. South Chicago and Ashtabula are the first to prepare for the deep-draft vessels. The enterprise of citizens in these two small places is commendable, although they were helped, of course, by iron manufacturers and the railway corporations.

With the fining of more vessels recently for the violation of rules governing the navigation of the St. Mary's river, it is admitted that there is a wide diversity of opinion among owners and masters as to the fairness of the rules to all interests. A general expression of opinion would probably show that the rules are regarded as too stringent by a majority of the various interests. It is certain, however, that there will be no change until after the matter is again fully discussed during the coming winter. Such is the verdict of executive officers of the Lake Carriers' Association, who do not seem to have changed their minds as a result of the great number of fines imposed. The great argument against any change at this time is the total freedom from accidents in the river since the rules have been in force.

A feature of the coming annual report of Chief Naval Constructor Hichborn will be a recommendation to congress for appropriations for sheathing all ships of the United States navy of and below the cruiser class. The chief constructor has been known to favor sheathing for some time past, but it is understood that his coming report will contain a special plea in this regard. Mr. Hichborn will show that while there may be a small loss of temporary speed, the sheathed vessels will in continuous service be able to do equally as fast, if not faster work, and will always be ready for service, instead of having to be laid up at navy yards every nine months to be scraped and painted. It is said that the sum necessary to pay the expenses of cleaning and painting a ship's bottom for three years will defray the cost of sheathing.

It was on this date a year ago, Aug. 27, that the first move was made towards the boom in freights. All through June and July the rate on ore from the head of Lake Superior remained stationary at 85 cents. Ninety cents was the best rate that could be secured during the first half of August. Then there was a period of several days when wild vessels were all taking grain, and on Aug. 27 one Cleveland shipper paid 95 cents. There was a general rush for tonnage and on the 28th the rate went to $1. Three days later, on Sept. 2, $1.05 was paid, and there was a steady advance during the following ten days, resulting in $1.25 being paid on Sept. 11. Ten days later, or Sept. 21, the rate was $1.40, and on Oct. 2 it was $1.50. Later in October a few cargoes were moved at $1.75.

Another race between the steam yachts Enquirer and Say When is talked of; in fact it is understood that Hon. W. J. White, owner of the Say When, which was defeated in the contest at Cleveland recently, has challenged or intends to challenge Mr. Connors for another race. Interest attending the Cleveland race has spread to all parts of the country, and it would seem that everybody who had anything to do with the construction or operation of the Enquirer is claiming special credit for her victory. The builders of hull, engines, boiler and propeller, as well as the dealers in the fuel used by the Buffalo boat, have all been given a full degree of attention due them as a result of the race.

Engineer Geo. Y. Wisner of Detroit, who is associated with the health commission of that city as an expert, is an advocate of the chemical system of disposing of the sewage of big cities. He says that on the lakes the problems of water supply and sewage disposal are so intimately related that the dumping of sewage in any form into the rivers or lakes should be discouraged. The Cuyahoga river, he claims, is about as badly polluted as the Chicago river, and he says that the proposition to flush the Cuyahoga with water from Lake Erie involves a plan which is certain to completely pollute the only source of water supply for Cleveland.

The Cramps and the Union Iron Works are expecting every day to hear from the Japanese authorities at Tokio regarding contracts for war vessels for which they submitted bids. It is the general opinion in naval circles at Washington that the Japanese government will award a contract to each firm.

Toronto and return, $4.50—Excursions via the Nickel Plate road leave Cleveland, Monday, Sept. 7, at 5:30 a. m. and 9:30 p. m. Tickets sold to Niagara Falls or the Thousand Islands. For detailed information inquire at 224 Bank street, or depots. 303 Sep. 6

The Steam Yacht Race.

Editor Marine Review:—Referring to letter of Mr. Fred. A. Ballin, addressed to yourselves, as published in your issue of Aug. 20, page 11, under heading, "Discussion of the Steam Yacht Race," the inquiry which I desire to answer, quoting from Mr. Ballin's letter, is as follows: "Giving the builders of hull and engines of the Enquirer just credit, it still needs an explanation to understand how she could beat a racing machine like the Say When, considering and comparing dimensions and machinery."

In explanation, I am pleased to be able to inform Mr. Ballin and your readers generally that the Enquirer used the highest grade of steam fuel in the world in the race of Thursday, Aug. 13. In evidence of the fact that the celebrated Pocahontas coal is the best fuel for steamship use, I will state that the Wm. Cramp & Sons Ship and Engine Building Co. of Philadelphia, finding that the engines of the cruiser Yorktown, when she was tested by the government for speed on our coal, showed 400 horse power in excess of that shown when she used anthracite coal, gave our Pocahontas coal exhaustive tests; and this company, as well as other contractors, finding it would drive a steamer faster, and develop the power of its engines to a greater degree than any other coal, have since used Pocohontas exclusively on all government cruisers which they have built for the past several years. As a result, the steamers Philadelphia, Baltimore, Newark, Bancroft, Detroit, New York, Machias, Castine, Montgomery, Marblehead , Columbia, Indiana and Massachussetts all showed such an excess, both of engine power and rate of speed over the contract requirements, that the builders received large bonuses on all the ships, the amounts at times reaching as high as $350,000. The data of steam trials of various vessels above named is as follows:

Name.	Builder.	Date of trial.	Premium.
Baltimore	Cramp & Sons	Nov. 15, 1889	$106,442
Philadelphia	Cramp & Sons	June 25, 1890	100,000
Newark	Cramp & Sons	Dec. 22, 1890	36,857
Bancroft	Moore & Sons	Jan. 26, 1893	45,000
Detroit	Columbian Iron Works	April 17, 1893	150,000
New York	Cramp & Sons	May 22, 1893	200,000
Machias	Bath Iron Works	June 10, 1893	45,000
Castine	Bath Iron Works	Sept. 15, 1893	50,000
Columbia	Cramp & Sons	Nov. 18, 1893	350,000
Marblehead	Quintard Iron Works	Dec. 7, 1893	125,000
Montgomery	Columbian Iron Works.	Jan. 19, 1894	200,000
Indiana	Cramp & Sons	Oct. 1895	50,000
Massachusetts	Cramp & Sons	April 1896	125,000

Showing total of premiums earned with Pocohontas coal of $1,583,299.

The U. S. S. Charleston used Cardiff coal on her trial trip and a penalty of $33,384 was imposed; the Monterey used Cardiff coal and a penalty of $32,723 was imposed, while the San Francisco earned a premium of $100,000 with Cardiff coal. The U. S. S. Petrel used Cumberland coal on her trial trip and a penalty of $485 was imposed. The Concord used anthracite coal and earned a premuim of but $453, and the Bennington also used anthracite coal with a premium of only $3,609. These facts speak for themselves. Under date of Sept. 23, 1889, the Wm. Cramp & Sons Ship and Engine Building Co. wrote us in testimony of the fine steaming qualities of Pocahontas coal, as follows:

Messrs. Castner & Curran, General Agents, Pocohontas Coal.—Gentlemen: On the trial trips of the U. S. S. Baltimore we used the Pocahontas coal. For more than four hours we ran with a forced draught that showed an average pressure of 2.25 inches. Under such conditions the fires raised plenty of steam, the coal burning with an intense white heat and but a small amount of ash was produced. Although the firemen were on for the entire four hours they were in no way distressed. We are entirely satisfied with the action of this coal and consider it the best that we have ever used.

William Cramp & Sons Ship and Engine Building Co.,
Philadelphia, Sept. 23, 1889. by W. M. Cramp, Vice-President.

The Herreshoff Manufacturing Co. (to whom Mr. Ballin refers as the builders of the Say When, now owned by the Hon. W. J. White of Cleveland,) hearing of the wonderful steaming qualities of our Pocahontas coal, and having satisfied themselves, by analysis and trial trips, that a steamer using it would attain a speed she could not reach by the use of other coal, tested the torpedo boat Cushing (built for the government) with our coal, which caused her to exceed the speed called for by the government, of 22 knots an hour. During a run of three hours, the vessel did not vary seven pounds in the amount of steam carried. She was under 240 and 247 pounds during the entire run, her full capacity being 250 pounds.

In consequence of the remarkable showing of the cruisers mentioned above, the secretary of the navy, on Aug. 15, 1889, issued a general order to the commandants of navy yards, directing them to make all trial trips of cruisers with Pocahontas coal. Since this order was issued all government vessels have been tested with Pocohontas coal. Under date of March 28, 1890, the Herreshoff Manufacturing Co. wrote us in testimony of the fine steaming qualities of Pocohontas coal, as follows:

Castner & Curran, General Agents Pocohontas Coal, Philadelphia, Pa.—Gentlemen: We hand you herewith analysis of the Pocahontas coal which you furnished us, and which was used in the official trials of United States torpedo boat Cushing. We take pleasure in saying that we have found this coal to be the finest American coal we have ever had anything to do with, and we believe it is nearly if not quite, equal to the best English coals. Herreshoff Manufacturing Co.
Bristol, R. I., Mar. 25, 1890.

I trust that the above facts will fully explain how and why the Enquirer won the race, and as Mr. Ballin is a yacht builder, I have no doubt that these facts will prove interesting to him, as well as to the general public. G. E. Alkins, Agent.
Columbus, O., Aug. 21, 1896.

Loss of the Atlantic.

Editor Marine Review:—In your issue of the 13th inst., in an item giving an account of disasters to early lake passenger steamers, the last paragraph states that "the Atlantic foundered in a gale of wind."

If this refers to the steamer of that name which left Buffalo for Detroit in the fall of 1852, I beg leave to correct you by stating that she was run into by the propeller Ogdensburgh and nearly cut in two. Over 400 lives were lost, most of them immigrants. My father occupied a state-room and was saved. L. E. Osborn,
Sheffield Scientific School,
New Haven, Conn., Aug. 22, 1896. Yale University.

Seeking Information.

Editor Marine Review:—We are subscribers of your journal, and desirous of learning something about Mississippi river commerce. Can flour and grain be shipped from St. Paul to New Orleans by water without change? If so, what are the rates on flour, corn and wheat to New Orleans, and what is the capacity of vessels engaged in the trade? Probably some of your subscribers can answer these qusteions.

Kirkwood & McKinnon.
Sudbury, Ont., Aug. 21, 1896.

The General Electric Co. recently secured another big order for electrical equipment to be used in a power plant on the Kern river, the third largest stream in California. The General company's three-phase apparatus will be used to transmit the power of the river to Bakersfield, a straight-line distance of about fourteen miles. The capacity of the power plant, which was built by the Power Development Co., and in the flume of which there is 475,000 feet of red wood, is estimated at 7,500 horse power. The electrical equipment will consist at first of two 450 kilowatt three-phase generators running at 257 revolutions per minute. The voltage at the dynamo terminals will be 550 volts. This will be raised in step-up transformers to 11,000 volts, and will be carried on six No. 4 bare copper wires to the sub station at Bakersfield, where it will be transformed down to 2,000 volts for distribution. The current will be utilized at first on an extensive system of electric railroads, as well as for street and house lighting, and for operating pumps for irrigation purposes. Mines in the mountains will also probably take current for their mills, hoists, pumps, etc.

Letters bearing the following names await claimants at the marine post office, Detroit, Mich.: N. A. Klees, Peter Marcroix, Rev. W. Maher, Sara McDonald, Daniel Ward.

G. A. R. Encampment, St. Paul—The Nickel Plate road sells excursion tickets Aug. 30, 31, and Sept. 1. Through Chicago sleeping cars and diners on through trains. 253 Sep 2.

Why Sailors Like It.

The reason sailors like the "Providence" windlass, made by the American Ship Windlass Co. of Providence, R. I., is because it is so simple, so efficient and so durable. The design of the windlass is such, with the tandem engines, that every part is accessible to the operator. It is so simple that the operator can always see exactly what he is doing in locking and unlocking the windlass. It can be done instantly with one motion of the hand on the locking lever, so that in case of emergency it avoids the trouble which a delay in locking would entail. It is durable and reliable, because the wild cat or chain wheel and the friction band are close up against the side bitt, so that they get a solid support, and the liability of any bending of the shaft or breaking of the windlass is greatly reduced. The engines are all made to gauge and templet, and working in a vertical position the wear on all sides of the cylinders is equal, so that the engines will last longer than with inclined cylinders or horizontal cylinders.

The windlass has been constantly improved during all the forty years it has been manufactured by the American Ship Windlass Co., and during all these forty years it has always been regarded as far in advance of any windlass made anywhere in the world. It is owing to these facts that more than seven-eighths of all the steam windlasses in use in this country are of this pattern. While it may be possible to buy a slightly cheaper windlass, the difference in first cost is so slight that in the life of a windlass this slight difference soon disappears, and in an emergency it disappears at once and saves many times the whole cost of the windlass in a few minutes' time. Ship owners and builders may depend upon it that the best is the cheapest in the end. The American Ship Windlass Co. can refer with pride to the record which it has established during the forty years that their machines have been before the public.

G. M. Davis & Co., 96 to 100 N. Clinton street, Chicago, manufacturers of the well-known Davis balanced piston frictionless valve, have issued a catalogue that contains, in addition to advertising features, about twenty pages of carefully selected engineering information, reference tables, etc. This company deals in all kinds of devices for regulating steam, water, gas or air pressure.

Around the Lakes.

The Bethlehem Iron Co. has issued on a small card a handy table giving weights of round steel per running inch. A copy of it may be had from Mr. H. F. J. Porter, western agent of the company, Marquette building, Chicago.

Cleveland offices of the United States weather bureau are to be enlarged and improved upon an extensive scale. Edward A. Beals, an inspector in the service, has taken up headquarters in Cleveland and will give a large part of his time to special matters on the lakes.

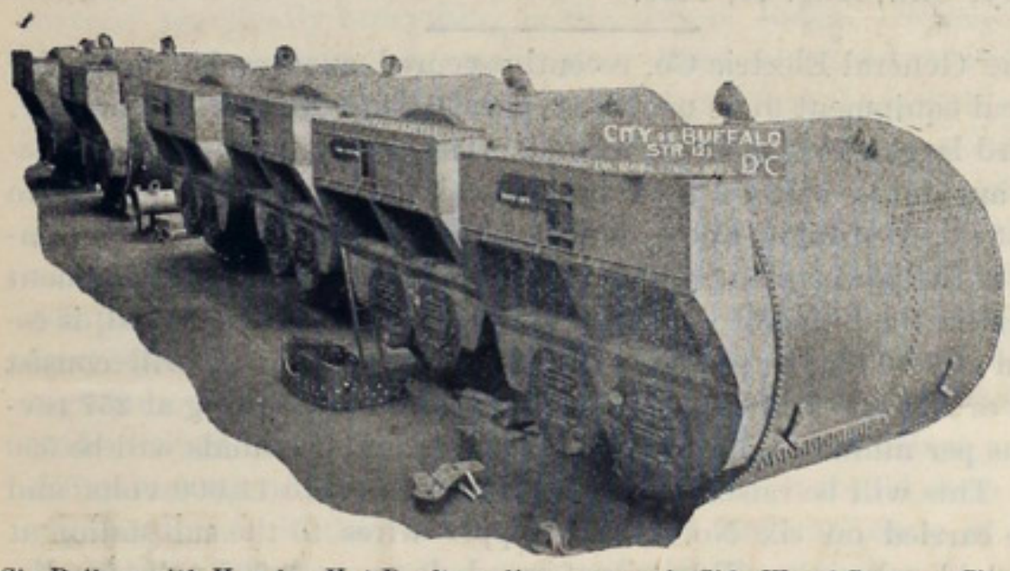
Capt. Richardson and Capt. Geo. McLeod are to be congratulated upon their success in getting the steel steamer Wm. Chisholm into dock within such a short period after her collision with the Oceanica. The job of repairs will be an extensive one, however, as about fifty plates must be taken off, some to be replaced by new ones and others to be rolled and put back into place.

Capt. John Fitzgerald, president of the Milwaukee Ship Yard Co., who died in Milwaukee, Saturday, was sixty-three years of age and belonged to the old line of vessel captains who gained wealth and prominence through steady and careful application to business. He was in command of sailing vessels as late as 1872. Long service and integrity had made an honored place for him among vessel owners. He is survived by four brothers, R. P. Fitzgerald, Milwaukee vessel agent; Wm. Fitzgerald, inspector of steam vessels, and Edward and M. Fitzgerald of Port Huron. His son, Wm. E. Fitzgerald, is secretary and treasurer of the Milwaukee Dry Dock Co.

General Passenger Agent A. A. Heard of the Northern Steamship Co. announces a low schedule of special excursion rates on the North Land and North West, in closing the company's third season before Sept. 15. The big passenger ships are to make two trips in September, and rates are marked down on a basis of $20 from Buffalo to Duluth, and $18 from Buffalo to Chicago. The sudden suspension of tourist travel about Sept. 1 probably prompts these reduced rates. Everybody acquainted with the climate of the Lake Superior country will agree, however, that the early part of September is the most delightful period of the year in that region, and it is strange that passenger travel is largely cut off so early. Vessel masters never cease talking of the clear air of Lake Superior in September.

Air is Cheap—Cheaper than Dirt!

FUEL IS DEAR—VERY DEAR!
USE AIR AND SAVE FUEL!



Six Boilers with Howden Hot Draft appliances now in Side-Weeel Steamer City of Buffalo. Dimensions of each boiler—12 ft. 6 in. diameter by 12 ft. length.

ECONOMY in operating expenses on Lake Ships must come from reduced coal bills. No great saving can be made in labor cost, and provisions are already low. But fuel bills can be lowered and cheap coal used to advantage by adopting Modern Methods of making steam at low cost.

No manufacturer of pig iron would to-day think of running his furnace without a hot blast. Competition would not permit it. This same competition demands advanced practice in the operation of ships. The same principle is applied in the

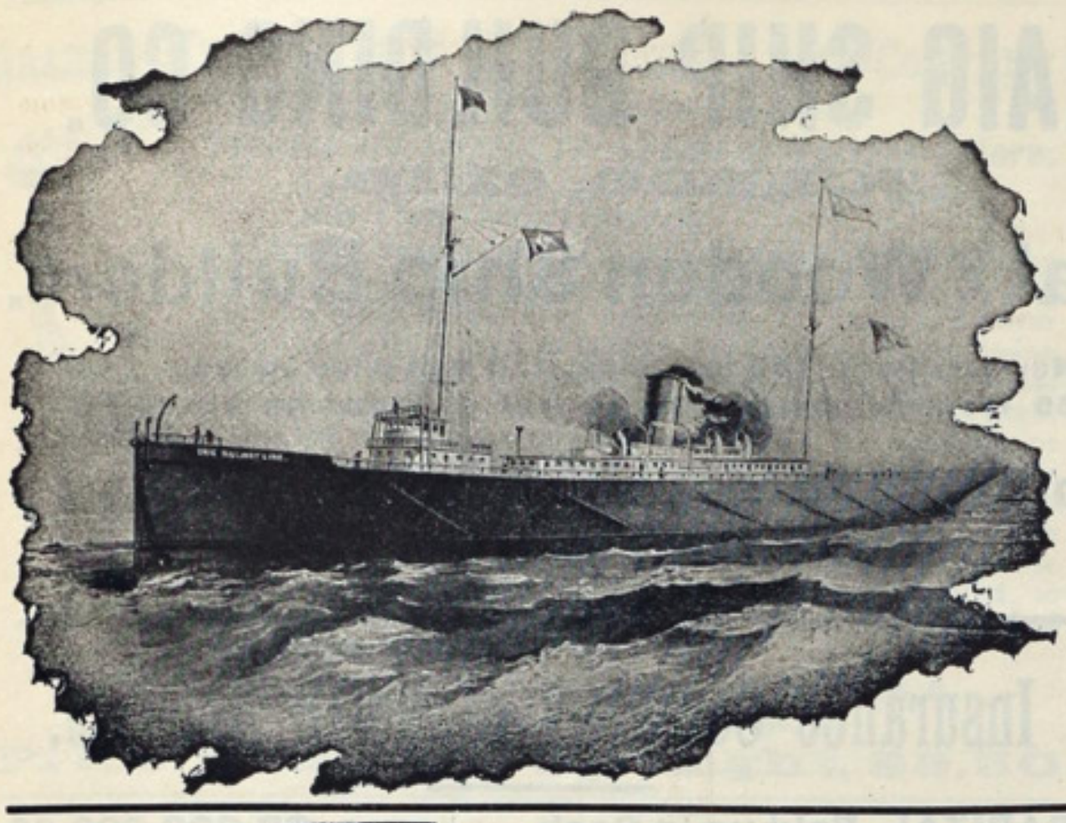
HOWDEN HOT DRAFT

Now in use on Lake Steamers aggregating over 40,000 Horse Power.

CAN BE APPLIED TO OLD SHIPS AS WELL AS NEW ONES.

No complicated machinery. Cool engine rooms and cool fire holds. Estimates readily furnished for application of this draft to any steamer.

DRY DOCK ENGINE WORKS, DETROIT, MICH.



Rapid Fueling Docks,

DETROIT RIVER.

JAMES GRAHAM, Foot Twenty-first St., Detroit,

Below Routes of Passenger and Car Ferry Lines.

Pockets and Chutes arranged for different types of vessels.

BEST STEAM COAL.

Large Supplies and every effort to give dispatch, day and night. Wide stretch of river for tows, and plenty of water at dock at all times.

Keeping a sharp look-out for Shipman's Koal Dock.

GIVE US a chance to prove that we can coal your boats with quick dispatch, and with most satisfactory fuel.

We have Four Large CHUTES on our Docks at AMHERSTBURG, ONTARIO, 1,000 FEET RIVER FRONT and Day and Night Force.

OUR STOCK CONSISTS OF

"Keystone" Massillon, Youghiogheny, and Best Grades of Hocking Koals.

O. W. SHIPMAN, MAIN OFFICE, 90 Griswold St., **Detroit, Mich.**

Cuddy-Mullen Coal Co.

Lake Shippers of Steam Coal.

FUELING DEPARTMENT FACILITIES:

CLEVELAND HARBOR—
Car Dumper; Eight Pockets; Three Steam Derricks; Lighter.

DETROIT RIVER BRANCH—
Amherstburg, Steam Derricks; Sandwich, Ten Pockets and Two Steam Derricks.

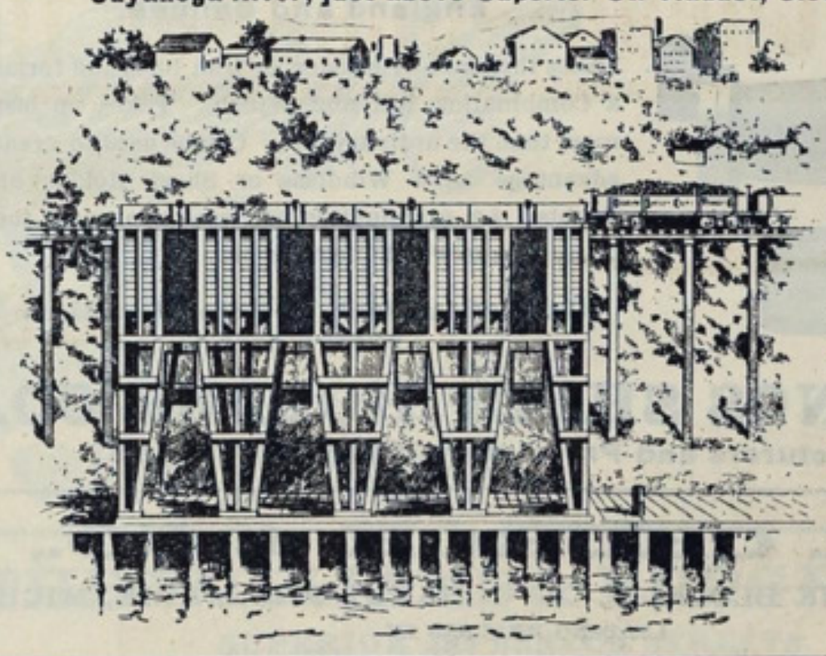
SAULT RIVER BRANCH—
Pocket Dock now under construction.

Good Coal; Courteous Attention; Quick Dispatch.

General Offices: Perry-Payne Bldg., Cleveland, O.

FUEL DOCKS OF OSBORNE, SAEGER & CO.

Cuyahoga River, just above Superior St. Viaduct, Cleveland, O.



Best Youghiogheny Steam Coal Furnished Day or Night. No delay as Elevated Pockets are used.

THE BABCOCK & WILCOX CO.

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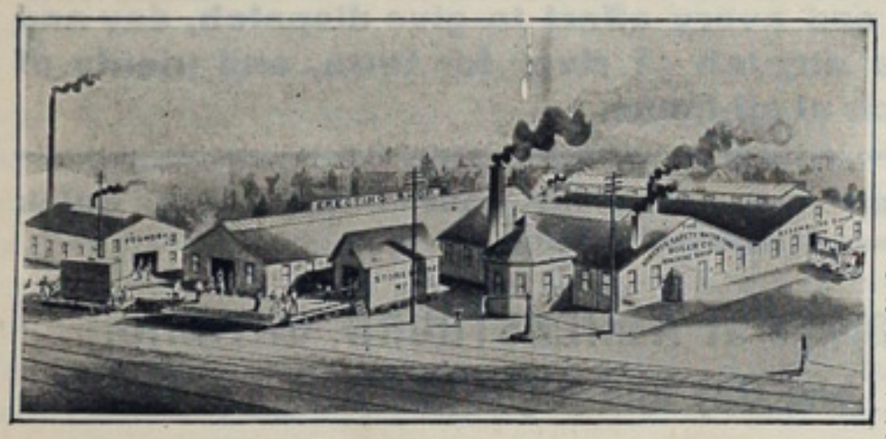

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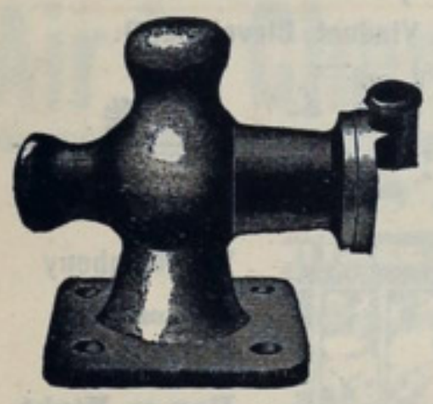

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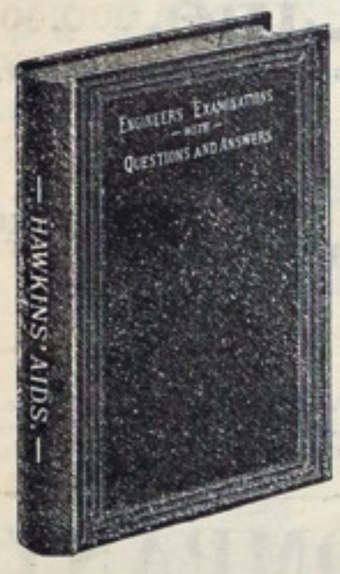

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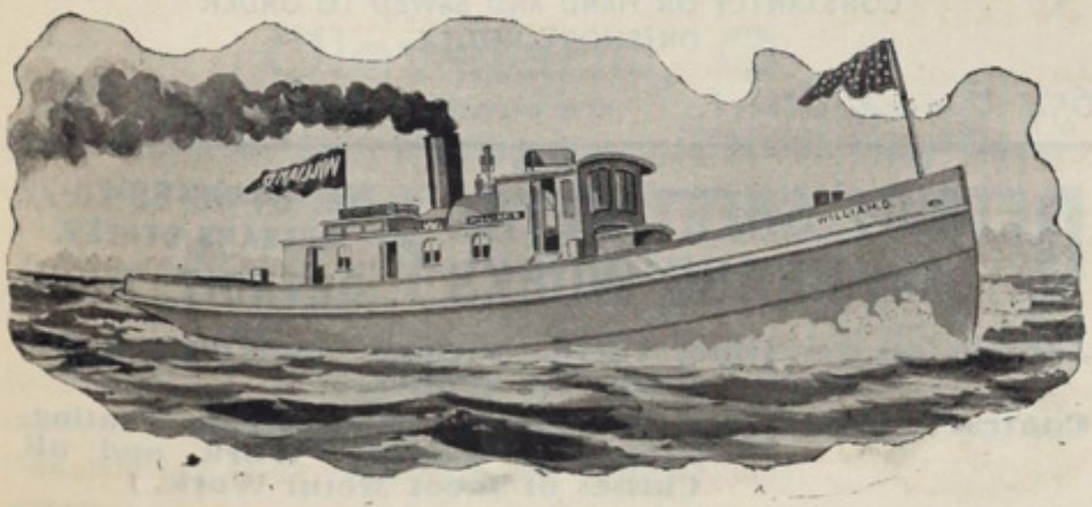

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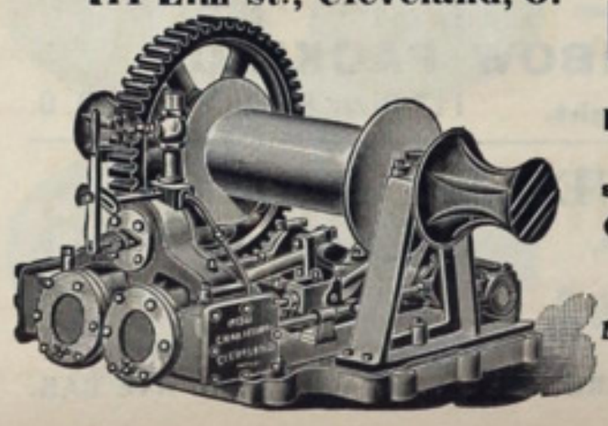

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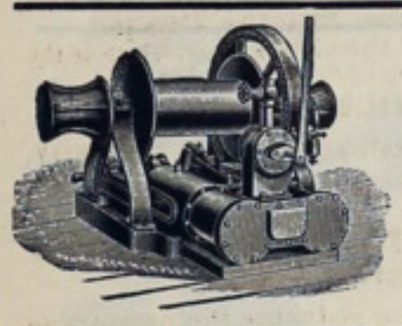

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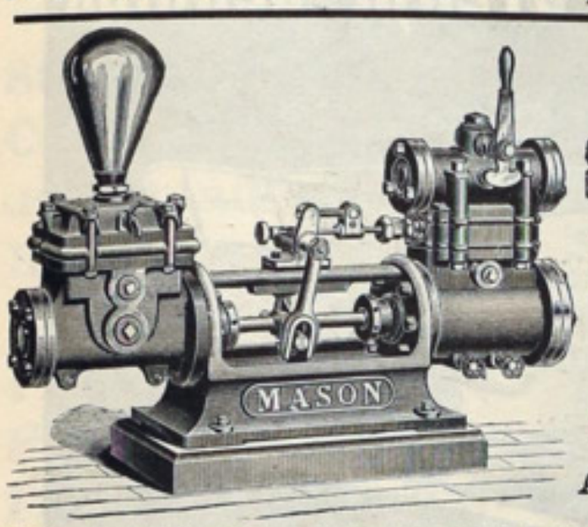

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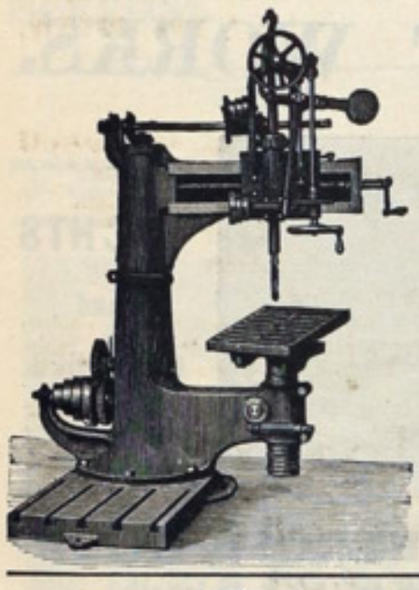

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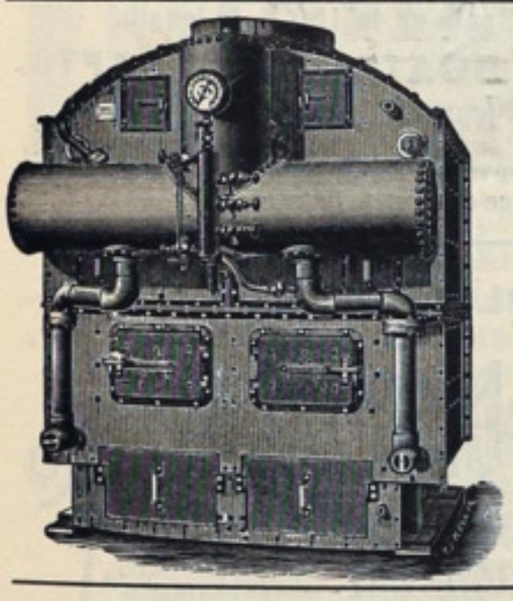

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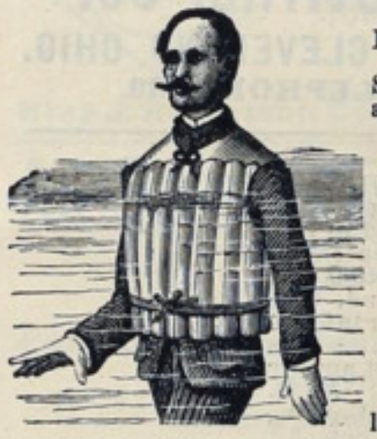

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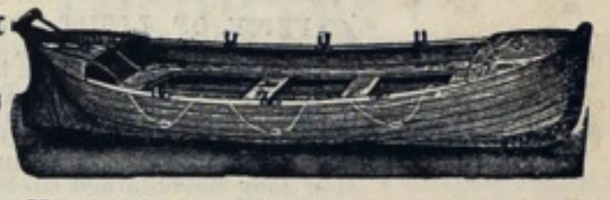

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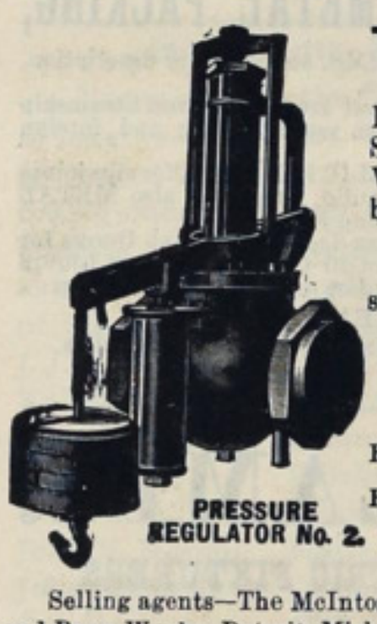

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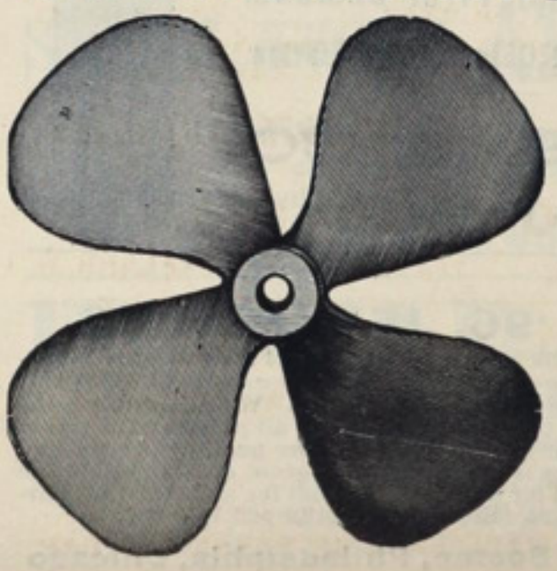

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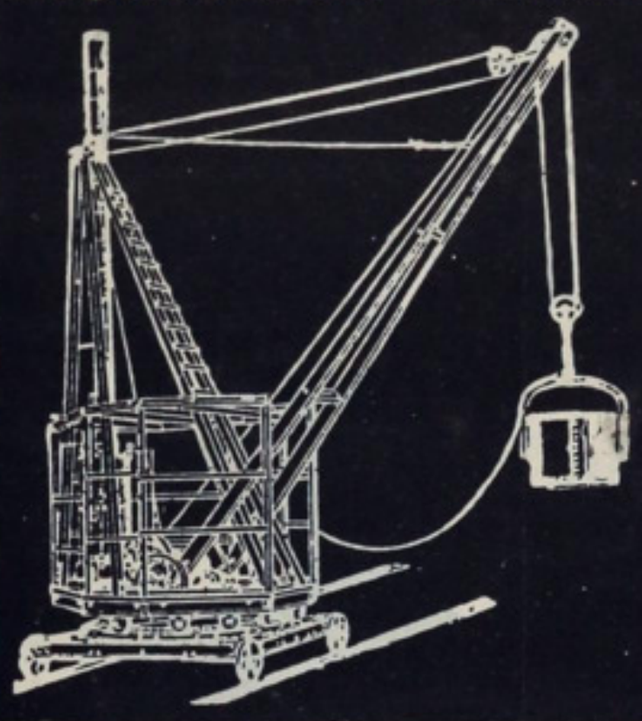

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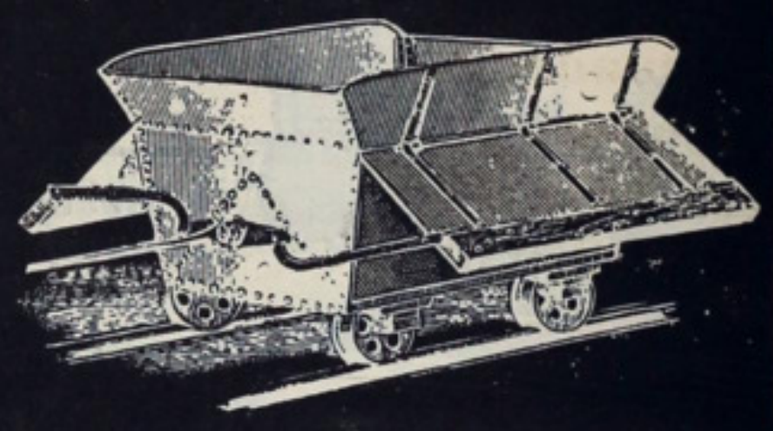

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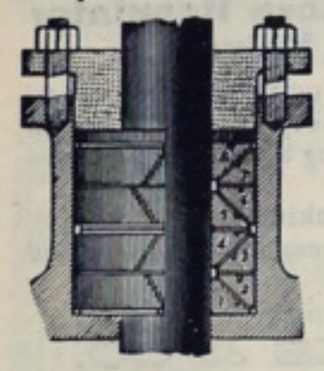

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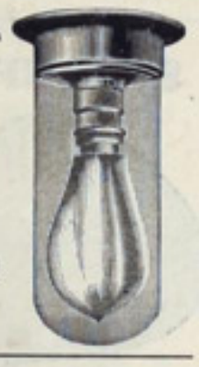

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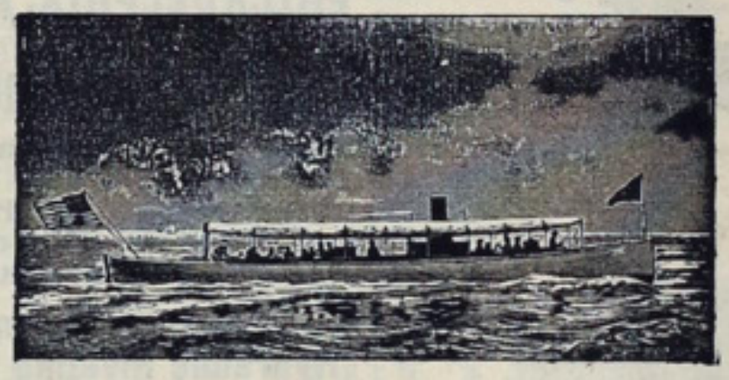

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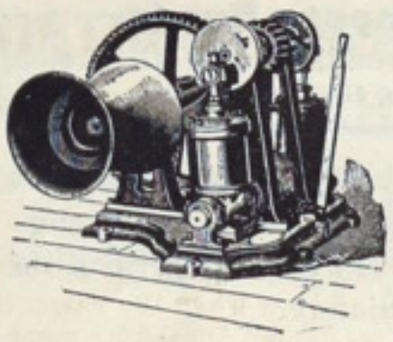

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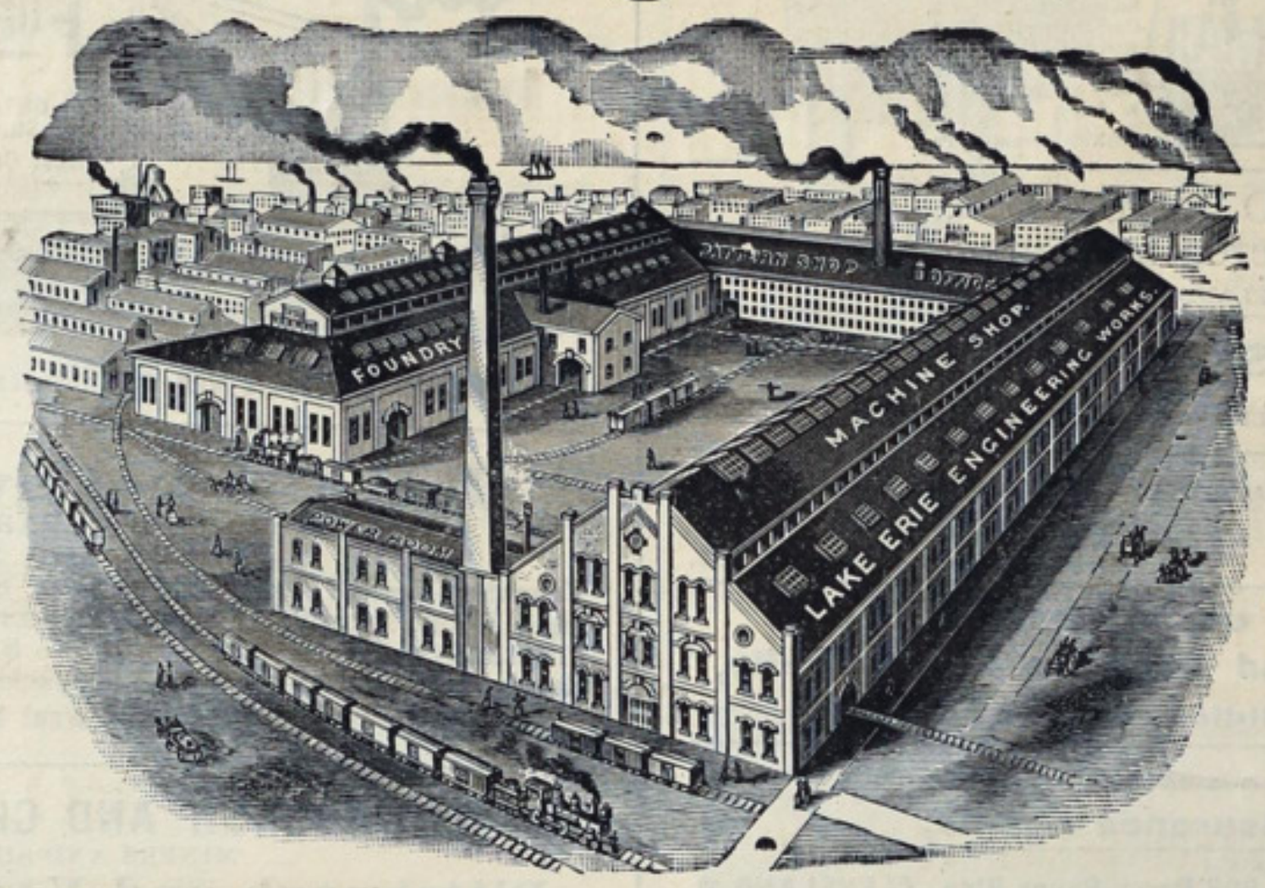

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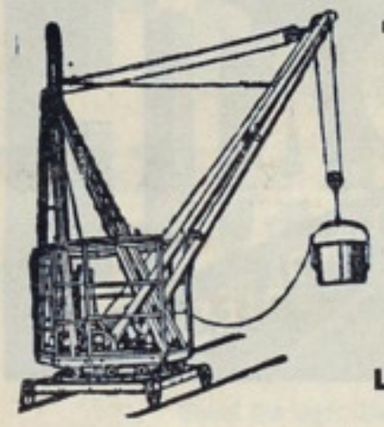

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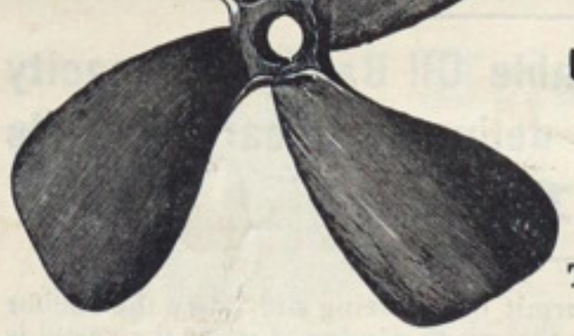

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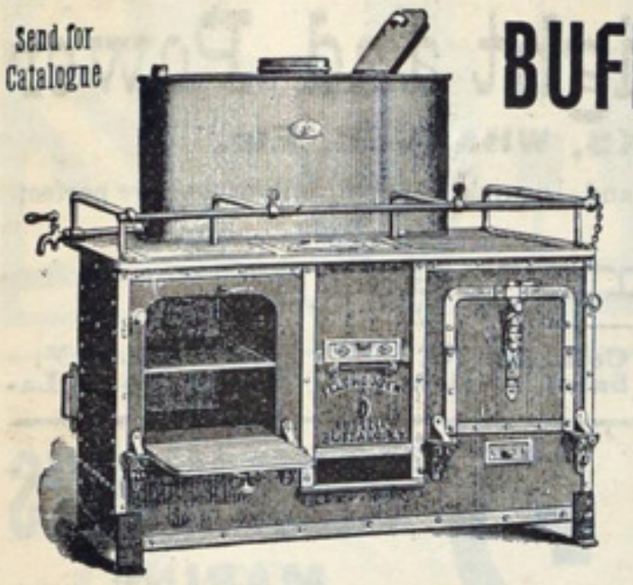

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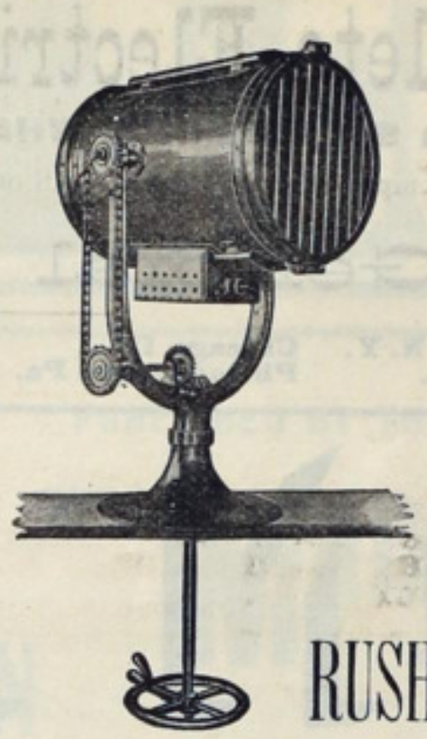

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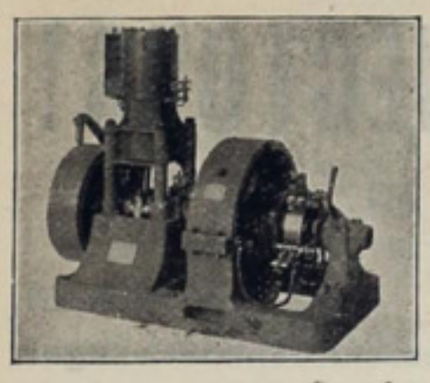

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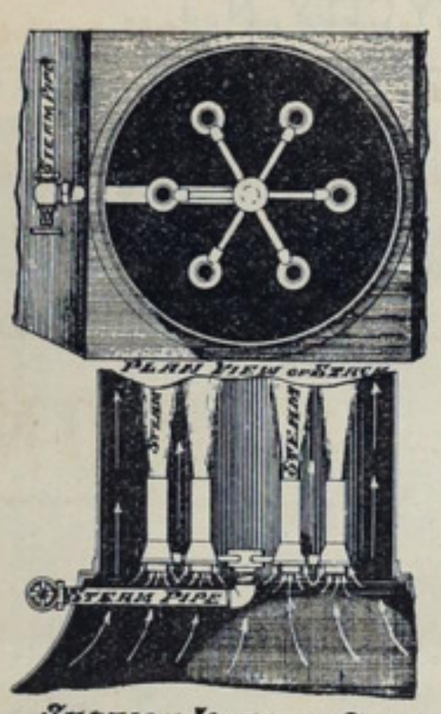

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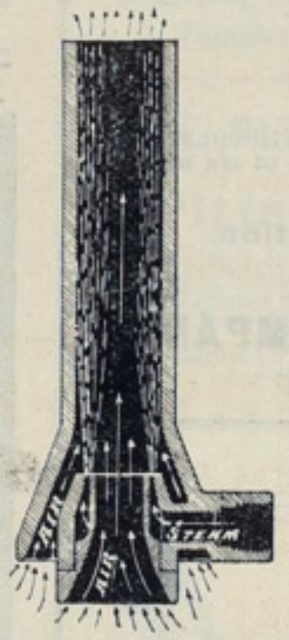

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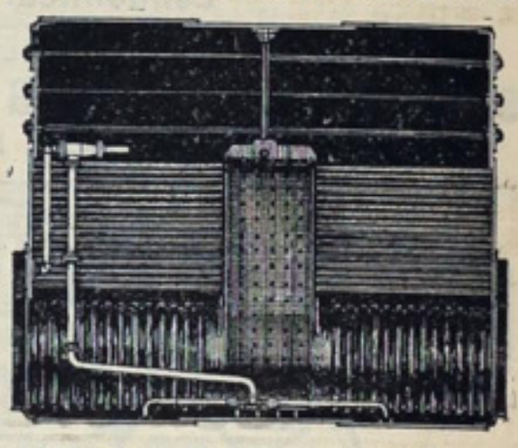

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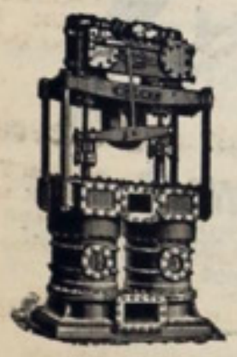
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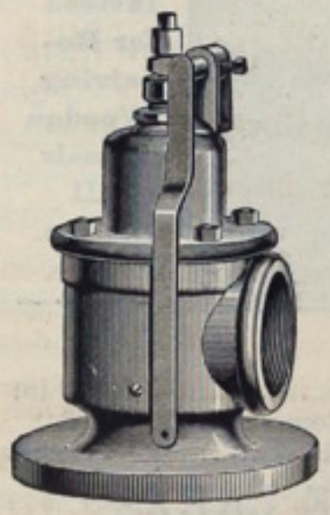

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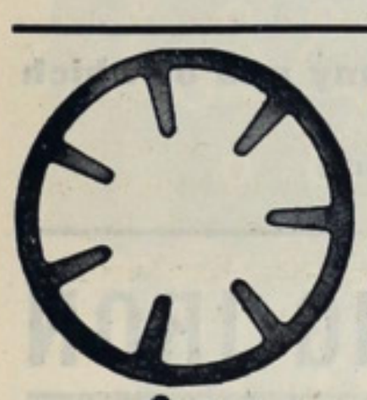

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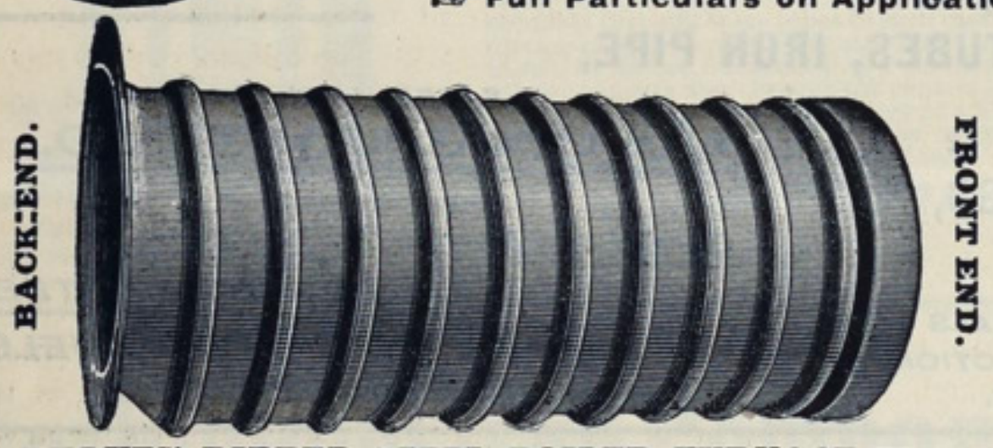

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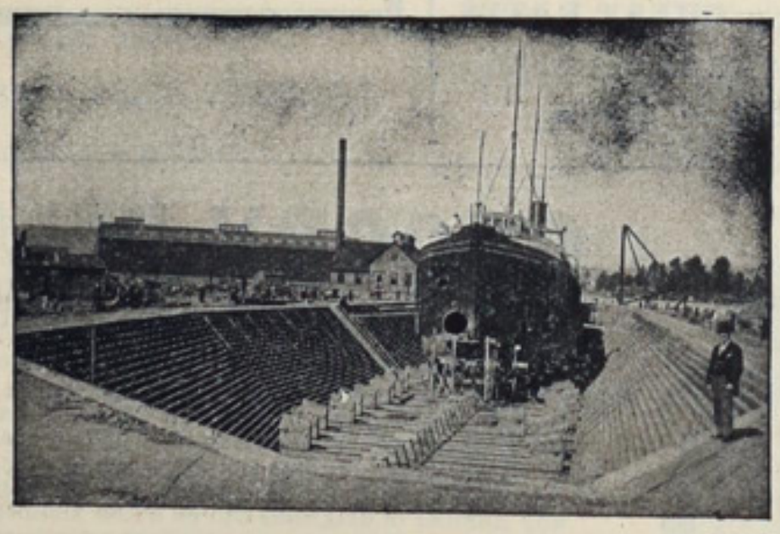

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